

**Claims**

1 **1.** Method to create a topology map indicating the quality of connectivity of each network device of a wireless network with all other network devices in said wireless network, **characterized by** the following steps:

5 - performing a measurement phase in which a calibration signal is successively broadcasted by each network device and in which all respective other network devices receiving said calibration signal measure the received signal quality;

10 - performing a reporting phase in which the measurement results are transmitted from each network device to the network device creating said topology map; and

- performing a creating phase in which said topology map of the network is created within the network device creating said topology map on basis of all received measurement results.

15 **2.** Method according to claim 1, **characterized in** that said calibration signal is transmitted in a dedicated control channel.

**3.** Method according to claim 1 ~~or 2~~, **characterized in** that said measurement results are reported in a respective dedicated control channel.

20 **4.** Method according to ~~anyone of the preceding claims~~, **characterized in** that said calibration signal is transmitted with the maximum allowed transmit power level.

25 **5.** Method according to ~~anyone of the preceding claims~~, **characterized in** that said topology map is updated when a new network device joins the network.

30 **6.** Method according to ~~anyone of the preceding claims~~, **characterized in** that said topology map is updated after a predetermined amount of time.

**7.** Method according to ~~anyone of the preceding claims~~, **characterized in** that said topology map is stored in the central controller.

1 8. Method according to <sup>Claim 1</sup> ~~anyone of the preceding claims~~, characterized in that said topology map is broadcasted in the whole network.

2 9. Method according to <sup>Claim 1</sup> ~~anyone of claims 1 to 5~~, characterized in that only 5 the parts of the topology map related to a specific network device are transmitted to said specific network device.

3 10. Method according to <sup>Claim 1</sup> ~~anyone of the preceding claims~~, characterized in that said calibration signal is transmitted using an omni-directional antenna.

4 11. Method according to <sup>Claim 1</sup> ~~anyone of the preceding claims~~, characterized in that the contents of the topology map are codes that are mapped to receive power values.

5 12. Method according to <sup>Claim 1</sup> ~~anyone of the preceding claims~~, characterized in that said measurement phase and/or reporting phase is initiated by the network device creating said topology map.

6 13. Network device for a wireless network, characterized by means to broadcast a calibration signal, to measure a power level of a received calibration signal, and to transmit its measurement results to another network device or to store it internally.

7 14. Network device according to claim 13, characterized in that said functions are performed on demand of another network device or on an internal demand.

8 15. Network device according to claim 13 or 14, characterized by a calibration decoder (9) that initiates the broadcast of a calibration signal and the measurement of the reception quality of one or more incoming calibration signals upon reception of a measurement control signal.

9 16. Network device according to claim 15, characterized in that said calibration decoder (9) initiates the transmission of one or more measurement results upon reception of a reporting control signal.

*Claim 13*

1 17. Network device according to anyone of claims 13 to 16, characterized by a report encoder (10) that receives one or more signal quality indication signals and encodes therefrom a signal quality control signal to be transmitted to said other network device.

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18. Network device for a wireless network, characterized by means to initiate a measurement phase, to initiate a reporting phase and to perform a creation of a topology map on basis of measurement results received during the reporting phase.

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19. Network device according to claim 18 including the features of anyone of claims 16 to 20.

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